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RECORDS AND MEASUREMENTS OF NEOTROPICAL BATS

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The collection of Chiroptera in Field Museum contains a number of little-known neotropical bats and others providing new distributional records. These have been received by gift, purchase, and Museum expeditions. Nearly half of them were taken by Mr. Frank J. W. Schmidt on the Mandel Guatemala Expedition, 1934.

The object of this paper is to place these specimens, with the measurements of the rarer species, on record. No measurements for some of them have been published since the time of Peters and Dobson and then no very exact measurements of the skull.

Twenty-four species are listed as follows:

EMBALLONURIDAE

Cormura brevirostris Wagner
Peropteryx kappleri Peters
Centronycteris maximiliani centralis Thomas
Balantiopteryx io Thomas

PHYLLOSTOMIDAE

Lonchorhina aurita Tomes
Tonatia bidens Spix
Tonatia amblyotis Wagner
Phyllostomus discolor discolor Wagner
Phyllostomus discolor verrucosus Elliot
Phyllostomus elongatus Geoffroy
Anoura geoffroyi lasiopyga Peters
Lichonycteris obscura Thomas
Platalina genovensium Thomas
Rhinophylla pumilio Peters
Sturnira lilium parvidens Goldman
Vampyrops fumosus Miller
Vampyrodes major G. M. Allen
Vampyriscus bidens Dobson
Chiroderma isthmicum Miller
Artibeus jamaicensis jamaicensis Leach
Artibeus watsoni Thomas
Centurio senex Gray

DESMODONTIDAE

Diphylla ecaudata Spix

MOLOSSIDAE

Promops centralis Thomas

Cormura brevirostris Wagner.

Emballonura brevirostris Wagner, Wiegmann's Arch. Naturg., 9, pt. I, p. 367, 1843—Marabitanas, Amazonas, Brazil.

Peru: Tingo Maria, Huallaga River, 1 female (alc., skull cleaned), October 3, 1922, E. Heller.

The only other Peruvian record of this rare bat is one mentioned by Thomas (Ann. Mag. Nat. Hist., (8), **11**, p. 134, 1913) from the Rio Inambari.

Measurements.—Forearm 47.2; pollex 8.7; second digit metacarpal 40.3; third digit metacarpal 42.3, first phalanx 13.7, second phalanx 18.2, tip 4.6; fourth digit metacarpal 37.1, first phalanx 10.2, second phalanx 8.4; fifth digit metacarpal 34.1, first phalanx 11.6, second phalanx 6.4; ear from meatus 12.4; tibia 17; foot 8.1; calcar 17.4. Skull: greatest length 16; condylo-basal length 14.3; palatal length 6.4; intertemporal width 3; interorbital width 5.7; zygomatic width 10.1; mastoid width 8.8; width of brain case 7.7; upper tooth-row c–m^3, 6.3; width across upper canines 3.7; width across m^2–m^2, 7.4; lower tooth-row c–m_3, 7.4; length of mandible 11.6.

Peropteryx kappleri Peters.

Peropteryx kappleri Peters, Monatsb. Akad. Berlin, p. 473, 1867—Dutch Guiana.

Guatemala: Escobas, near San Tomas, Izabal, 1 juvenile male, 3 females, November 30, 1933, F. J. W. Schmidt.

The known range of this bat, recently recorded from Panama, is now extended much farther north by these specimens from Guatemala. They were "caught in a small cave, caused by the piling up of large limestone boulders, at the foot of a cliff."

Centronycteris maximiliani centralis Thomas.

Centronycteris centralis Thomas, Ann. Mag. Nat. Hist., (8), **10**, p. 638, 1912—Bogava, Chiriquí, Panama.

Guatemala: Escobas, near San Tomas, Izabal, 1 male, November 30, 1933, K. P. Schmidt.

This skin was relaxed and the antebrachial membrane examined, but no trace of a sac could be found. The membrane is damaged near the shoulder, which may be where the sac is, as Miller has suggested. The specimen was shot "flying-over creek, by Karl P. Schmidt." Dr. G. M. Allen recorded (Bull. Mus. Comp. Zool., **65**, p. 270, 1923) one from Costa Rica collected by Underwood, which is the only other specimen known except the type.

Measurements.—Skin: length 74; tail 25; foot 9; ear 17; tragus 6; forearm 45.4; calcar 19. Skull: greatest length 15.5; condylo-basal length 14.2; palatal length 6.1; zygomatic width 9.3; mastoid width

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7.7; rostral width 6.7; width across m^2–m^2, 7.1; length of basisphenoid pit 1.6; upper tooth-row c–m^3, 6.1; lower tooth-row c–m_3, 6.4; length of mandible 11.5.

Balantiopteryx io Thomas.

Balantiopteryx io Thomas, Ann. Mag. Nat. Hist., (7), **13**, p. 252, 1904—Rio Dolores, near Coban, Alta Verapaz, Guatemala.

Guatemala: Escobas, near San Tomas, Izabal, 8 males (2 alc.), 1 female, December 4–5, 1933, 4 males, 4 females (3 alc.), 4 skeletons, April 19–20, 1934, F. J. W. Schmidt.

In the original description of *B. io* it was compared with *B. infusca* Thomas from Ecuador, but the differences between it and *B. plicata* Peters have never been pointed out. The type locality of *plicata* is Costa Rica and as it has been taken in many parts of Mexico, it should occur in Guatemala with *io*. Compared with a series of ten specimens of *plicata* from San Geronimo, Oaxaca, Mexico, *io* is darker and smaller throughout, with an especially shorter tibia and skull. The nasal inflations are separate in *io* but more or less connected in *plicata*.

Measurements.—*B. plicata* in parentheses: forearm 35.7–38.7 (40.5–42.5); tibia 14–15.9 (17.3–18.7). Skull: greatest length 12.7–13.1 (13.9–14.8); condylo-basal length 11.2–11.7 (12.7–13.4); palatal length 3.4–3.6 (3.8–4.3); interorbital width 3.3–3.6 (3–3.7); zygomatic width 8.5–8.7 (8.8–9.2); mastoid width 7.7–7.9 (7.8–8); brain case 6.5–6.8 (6.8–7); width across canines 3.2–3.3 (3.3–3.7); upper tooth-row c–m^3, 4.7–4.9 (5.2–5.7).

Remarks.—These specimens were "shot in crevice in limestone cliff. Crevice formed cave 100 feet long, 100 feet high, and from two to four feet wide. About 100 bats seen."

Lonchorhina aurita Tomes.

Lonchorhina aurita Tomes, Proc. Zool. Soc. Lond., p. 83, 1863—West Indies.

Guatemala: Quebrados, Izabal, 14 males (5 alc.), 6 females (1 alc.), 3 skeletons, April 14, 1934, F. J. W. Schmidt.

This bat is known from sixteen specimens from the West Indies, Venezuela, Panama, and Bolivia. *L. occidentalis* Anthony is described from Ecuador. The present series agrees with Miller's measurements of two from Panama. The color of the fur is described by Dobson as "light reddish brown" and is about that color in one skin seen from Brazil. The color in the Guatemala series is Prout's Brown, some a little darker or lighter, and no doubt repre-

sents the dark phase of this bat. All the specimens were taken in a tunnel of a gold mine.

Tonatia bidens Spix.

Vampyrus bidens Spix, Sim. Vesp. Bras., Species Novae, p. 65, pl. 36, fig. 5 (animal), 1823—Rio San Francisco, Bahia, Brazil.

Tylostoma bidens Gervais, Exped. de Castelnau, p. 49, pl. 8, figs. 3–3b (teeth, $p\frac{2}{2}$ not shown), 1855.

Lophostoma bidens Peters, Monatsb. Akad. Berlin, p. 509, 1865; Dobson, Cat. Chirop., p. 473, pl. 26, figs. 2–2c (skull and teeth), 1878; Trouessart, Cat. Mamm., **1**, p. 153, 1897; Lyon, Proc. U. S. Nat. Mus., **24**, p. 154, 1901.

Tonatia bidens Palmer, Proc. Biol. Soc. Wash., **12**, p. 111, 1898.

Phyllostoma childreni Gray, Mag. Zool. Bot., **2**, p. 488, 1838.

Tylostoma childreni Gray, Proc. Zool. Soc. Lond., p. 114, 1866.

Distribution.—Eastern Brazil inland to Matto Grosso.

Brazil: Urucum de Corumba, Matto Grosso, 4 males (3 alc., one skull cleaned), August 13, 20, 1926, C. C. Sanborn.

Measurements.—Three alcoholic specimens and two skulls. Forearm 54.6 mm.–56.2 mm.; second digit 34.4–36.6; third digit metacarpal 45.6–48.5, first phalanx 18.7–19.6, second phalanx 21.7–23.4, tip 16.5–18.5; fourth digit metacarpal 46–49.9, first phalanx 14.5–16.1, second phalanx 15.6–16.4; fifth digit metacarpal 49–51.5, first phalanx 15.3–16.2, second phalanx 13.7–15. Ear from meatus 24.7–25.4; nose leaf, height 9.9–10.1, width 6.4–6.5. Tibia 24.7–26.8; calcar 17.9–19.1. Skull: greatest length 27.8–28; condylo-basal length 24–24.4; palatal length 12.6–13; interorbital width 5.6–5.8; zygomatic width 13.4–13.4; mastoid width 13–13.2; width of brain case 10.8–10.8; width across canines 5.9–6; width of rostrum at p^1–p^1, 5.5–5.6, at m^2–m^2, 7.9–8.4; upper tooth-row 9.6–9.7; lower tooth-row 10.8–10.9; length of mandible 17.2–17.6.

Remarks.—While the name of this bat has appeared with more or less regularity, no specimens have been recorded since the description of *childreni* almost one hundred years ago. It was a surprise to find it in Matto Grosso, the type locality of *amblyotis*, from which it differs in having smaller ears and a much greater interorbital width.

Tonatia amblyotis Wagner.

Phyllostoma amblyotis (Natt. MS.) Wagner, Arch. Naturg., p. 365, 1843—Matto Grosso, Brazil.

Lophostoma amblyotis Dobson, Cat. Chirop., p. 475, 1878.

Tonatia amblyotis Thomas, Ann. Mag. Nat. Hist., (7), **10**, p. 54, 1902.

Distribution.—From Matto Grosso, Brazil, north on west coast (Peru, Ecuador, Colombia) to Panama.

Ecuador: Rio Suno, below Loreto, 1 female, February 5, 1929; Montalvo, above Sarayacu, Rio Bobonaza, 5 females, February 4, 8, 1932; Rio Pindo Yaco, 1 female, October 17, 1934; Rio Yana Rumi, 1 male, October 20, 1934; Rio Capihuara, 2 males, 2 females, November 15, 24, 1934, Ramon Olalla.

Measurements.—Forearm 51.9–54; second digit metacarpal 33.2; third digit metacarpal 46.1, first phalanx 18.6, second phalanx 19.7, tip 19.1; fourth digit metacarpal 48.4, first phalanx 17, second phalanx 18.1; fifth digit metacarpal 51.1, first phalanx 17.6, second phalanx 15.1; tibia 26.5; foot 15.6; calcar 19.4. Skull: greatest length 26.8–29.2; condylo-basal length 21.6–24.1; palatal length 11.5–12.8; interorbital width 3.8–4.5; zygomatic width 12.3–13.6; mastoid width 12–14.1; width of brain case 10–10.7; width across upper canines 5.4–6.5, across p^1–p^1, 4.8–5.3, across m^2–m^2, 7.8–8.7; upper tooth-row 9–10; lower tooth-row 10.1–11.3; length of mandible 15.9–18.2.

Remarks.—Thomas has recognized (Ann. Mag. Nat. Hist., (8), **6**, p. 184, 1910) the form *T. sylvicolum* d'Orbigny as having shorter ears (25 x 21) and Cabrera records one (Trab. Mus. Nac. Cien. Nat., Madrid, No. 31, p. 11, 1917) with an ear measuring 27.4 x 21.5. The type locality of this form is "foothills of Bolivian Andes, in the country of the Juracares," which would place it in the Department of Yungas, between the headwaters of the rivers Secure and Isibara. This is supposed to be part of the range of *T. amblyotis* but all recent specimens of *amblyotis* have come from between Peru and Panama and may not be typical. Topotypical material of both forms is needed to settle their relationship.

Phyllostomus discolor discolor Wagner.

Phyllostomus discolor Wagner, Wiegmann's Arch. Naturg., **9**, pt. I, p. 366, 1843—Matto Grosso, Brazil.

Brazil: Deserto, Piauhy, 4 males, 3 females (only two with skulls), April 11–17, 1925, H. Snethlage.

French Guiana: Cayenne, 1 female, February 5, 1917, S. M. Klages.

Phyllostomus discolor verrucosus Elliot.

Phyllostomus verrucosus Elliot, Proc. Biol. Soc. Wash., **18**, p. 236, 1905—Niltepec, Oaxaca, Mexico.

Mexico: Niltepec, Oaxaca, 5 males, 3 females (including type), 13 males, 2 females alc., May 18, 1904; Orizaba, Vera Cruz, 5 males, 1 female, May 27–30, 1904, Heller and Barber.

Guatemala: Patulul, Solola, 18 males, 7 females alc., April 1, 1906, Heller and Barber; Escobas, Izabal, 1 female, April 20, 1934, F. J. W. Schmidt.

When Elliot described *verrucosus* he had no specimens of *discolor* and compared it with *hastatus*. *P. discolor* appears to be a rare bat and has been recorded but twice in recent years: J. A. Allen (Bull. Amer. Mus. Nat. Hist., **20**, p. 344, 1904) listed two from Venezuela, and Miller (Proc. Biol. Soc. Wash., **45**, p. 149, 1932) recorded five males from Panama.

The measurements of the Field Museum specimens and those of the Venezuelan specimens kindly sent by Mr. Tate are, for *discolor*, forearm 55.4–61.1, condylo-basal length of skulls 25.3–26.2; for *verrucosus*, forearm 57.7–65.6, condylo-basal length of skulls 25–27.8. Miller gave the forearms for Panama specimens as 64–66, and the condylo-basal length of the skulls as 28, which from available measurements of *discolor* would place them much closer to *verrucosus*. How typical *discolor* from Matto Grosso would compare with specimens from northern South America we do not know, but from present material *verrucosus* seems to average larger than *discolor*.

Phyllostomus elongatus Geoffroy.

Phyllostomus elongatum Geoffroy, Ann. Mus. d'Hist. Nat., **15**, p. 182, pl. 9, 1810—South America.

Ecuador: Montalvo, Rio Bobonaza, 1 female, February 5, 1932, R. Olalla.

This rare bat, known from Brazil, Peru, and Dutch Guiana, has been recorded but once in recent years when Thomas (Ann. Mag. Nat. Hist., (7), **8**, p. 191, 1901) listed two from Para, Brazil, but without any information about them. The present specimen seems to be a little large for the species.

Measurements.—Forearm 67.9. Skull: greatest length 29.8; condylo-basal length 25.2; palatal length 12.4; interorbital width 5.4; zygomatic width 15.2; mastoid width 13.1; width of brain case 11.1; width across canines 7.1; upper tooth-row c–m^3, 10.6; lower tooth-row c–m_3, 11.9; length of mandible 19.1.

Anoura geoffroyi lasiopyga Peters.

Glossonycteris lasiopyga Peters, Monatsb. Akad. Berlin, p. 365, 1868—southern Mexico.

Guatemala: Santa Elena, Chimaltenango, 11 males (4 alc.), 2 females, January 25, 26, 1934, F. J. W. Schmidt.

When this genus was revised (Sanborn, Field Mus. Nat. Hist., Zool. Ser., **20**, pp. 23–28, 1933) there were but three adult skins from Mexico available for examination. This series bears out the conclusions reached at that time, that *lasiopyga* has lighter under parts than either true *geoffroyi* or *peruana*, and also is intermediate in size. These specimens were caught in a butterfly net in a cave fifteen feet long and ten feet wide formed by boulders in a ravine. There were none in the cave when it was visited again on February 4.

Measurements.—Forearm 41.7–44.4; total length of skull 24.7–25.9.

Lichonycteris obscura Thomas.

Lichonycteris obscura Thomas, Ann. Mag. Nat. Hist., (6), **16**, p. 55, 1895—Managua, Nicaragua; Miller, Proc. Biol. Soc. Wash., **13**, p. 156, 1900—Dutch Guiana.

Costa Rica: Montes de Oca, Fuentes, 1 female, November 16, 1930, C. F. Underwood.

This is the third specimen of this species to be recorded and extends the range north to Costa Rica. Like the type and only known specimen of the other species *L. degener* Miller (Journ. Mamm., **12**, p. 411, 1931) from Para, Brazil, it is a female. The sex of the specimen from Dutch Guiana is not known.

Measurements.—Present specimen and type: total length 55, 52.7; tail 10, 6.7; hind foot 8, 7.5 s.u.; ear 10, 10. Taken on dried skin: forearm 33.5, 33; third digit metacarpal 33.2, first phalanx 12.3, second phalanx 17.1, tip 9.7; fourth digit metacarpal 32.1, first phalanx 8.6, second phalanx 11.8; fifth digit metacarpal 29.8, first phalanx 7.5, second phalanx 11.3; tibia 12.4, 12.6; calcar 8.5, 5.8. Skull: greatest length 19.3, 19.7; condylo-basal length 18.1; basal length 16.2, 16.8; palatal length 9.3, 11; interorbital width 4.4, 4; mastoid width 8.4; width of brain case 8.3, 8.1; across canines 3.4; across m^2–m^2, 4.5, 4.4; upper tooth-row 6.2, 6.4; lower tooth-row c–$m_{\overline{2}}$, 6.5, 6.4; mandible 13.4.

Platalina genovensium Thomas.

Platalina genovensium Thomas, Ann. Mag. Nat. Hist., (10), **1**, p. 121, 1928—near Lima, Peru.

Peru: Huanaco, 1 male, May 24, 1922, J. T. Zimmer.

This is the second specimen of this rare bat to be collected. It was taken "in deserted mine" and with it was collected a *Desmodus rotundus*. Mr. Zimmer says in his notes under this specimen: "fox-nosed bat, tongue extensible 41 mm. beyond incisors."

Measurements.—Present specimen and type: head and body 76, 72; tail 14, 19; hind foot 12, —; ear —, 13. Forearm 48.3; pollex c.u. 12.1; second digit metacarpal 44.1; third digit metacarpal 48, 45, first phalanx 17.6, 17.5, second phalanx 20, tip 11.7; fourth digit metacarpal 44.8, first phalanx 12.7, second phalanx 11.4, tip 2.7; fifth digit metacarpal 43.5, first phalanx 12.4, second phalanx 14.5; tibia 19.9; foot 13; calcar 8.9, 9. Skull: greatest length 31.3, 32; condylo-basal length 29.4, 31; palatal length 17.7, —; interorbital width 4.7, 5; mastoid width 11, —; breadth of brain case 9.5, 11; across canines 4.8, —; rostrum opposite m^1, 5.2, 5.2; upper tooth-row 10.1, 11; lower tooth-row 10.8, —; mandible 22.7, —.

Rhinophylla pumilio Peters.

Rhinophylla pumilio Peters, Monatsb. Akad. Berlin, pp. 355 and 520, 1865—Brazil; Dobson, Cat. Chirop., p. 495, pl. 27, figs. 1–1b (teeth), 1878—Bahia, Brazil; Jentink, Notes Leyd. Mus., **15**, p. 281, 1893—Berbice, British Guiana; Thomas, Ann. Mag. Nat. Hist., (9), **19**, p. 366, 1927—Ega (Teffe), Brazil and Yurac Yacu, northern Peru.

Ecuador: Rio Suno, below Loreto, 1 male, February 5, 1929, Olalla and Sons; Rio Capihuara, 1 female, November 29, 1934, R. Olalla.

These specimens are the eighth and ninth to be recorded and extend the range to Ecuador. It is a very widespread species, but Thomas noticed no difference between east Brazilian and Peruvian specimens. I can find no published measurements of the skull.

Measurements.—Male and female, respectively: Forearm —, 30.7; third digit metacarpal 33, 33, first phalanx 13.5, 14, second phalanx 16.7, 18; fourth digit metacarpal 32.1, 33.9, first phalanx 11.2, 11.7, second phalanx 10.7, 11.9; fifth digit metacarpal 33, 34.1, first phalanx 8.7, 9.4, second phalanx 10.1, 9.9. Skull: greatest length 19.4, 19.5; condylo-basal length 16.9, 17.2; palatal length 8, 8; interorbital width 5.2, 5.1; zygomatic width —, 10.2; mastoid width 9.3, 9.4; width of brain case 8.4, 8.5; width across canines 4.6, 4.7; width across m^2–m^2, 6.4, 6.7; upper tooth-row c–m^3, 5.3, 5.4; lower tooth-row c–m_3, 5.8, 5.8; length of mandible 12.1, 12.4.

Sturnira lilium parvidens Goldman.

Sturnira lilium parvidens Goldman, Proc. Biol. Soc. Wash., **30**, p. 116, 1917—Papayo, 25 miles northwest of Acapulco, Guerrero, Mexico.

Guatemala: Los Amates, Izabal, 1 male, February 9, 1906, N. Dearborn; Escobas, near San Tomas, Izabal, 1 male, December 5, 1934, F. J. W. Schmidt.

This bat is known from southern Mexico from six specimens including the type, and from one specimen from the Volcan de

Chiriquí, Panama. These Guatemalan specimens, which are both males, are smaller than the type, which is an adult female. The specimen from Escobas was caught in a steel trap set on a bunch of bananas on a fallen tree. The same trap had caught a *Carollia subrufa* two nights before.

Vampyrops fumosus Miller.

Vampyrops fumosus Miller, Proc. Acad. Nat. Sci. Phila., p. 405, 1902—Purus River, Brazil.

Ecuador: Montalvo, above Sarayacu, Rio Bobonaza, 1 male, February 7, 1932; Rio Pindo Yaco, Oriente, 2 males, 1 female, 1 skull only, October 11–12, 1934, R. Olalla.

These are the first specimens to be recorded since the description of the type. The specimen from Montalvo has been compared with the type in the National Museum by Mr. H. H. Shamel.

Measurements.—Forearm 54–55.7. Skull: greatest length 30.5–31.2; condylo-basal length 27.3–28; palatal length 14.6–16; interorbital width 6.3–7.1; zygomatic width 17.7–18.3; mastoid width 14.6–15.4; width of brain case 12.6–12.9; width across canines 8–8.5; width across m^2–m^2, 13.3–14.3; upper tooth-row c–m^3, 11.8–12.4; lower tooth-row c–m_3, 13–13.3; length of mandible 21–22.3.

Vampyrodes major G. M. Allen.

Vampyrodes major G. M. Allen, Bull. Mus. Comp. Zool., 52, p. 38, 1908—San Pablo, Panama.

Guatemala: Escobas, near San Tomas, Izabal, 2 males (1 alc.), 1 female, 1 skeleton, April 19, 1934, F. J. W. Schmidt.

This bat, known from one specimen from Costa Rica and the type from Panama, is here reported from Guatemala for the first time. The series agrees closely in color and measurements with the original description. The specimens were all taken in a bat net.

Measurements.—Forearm 53.7–54.2. Wing measurements on one alcoholic specimen: second digit metacarpal 41.9; third digit metacarpal 50.5, first phalanx 20.4, second phalanx 29.7; fourth digit metacarpal 49.6, first phalanx 16.6, second phalanx 18.1; fifth digit metacarpal 50.7, first phalanx 12.9, second phalanx 13.4; tibia 20.6, foot with claw 13.5, calcar 6.1. Ear, from meatus 18.7, from crown 13.4, width 13.7, tragus 7.5. Nose leaf 12.3 x 6.5, horseshoe 8.3. Skull: greatest length 28.9–28.9; condylo-basal length 24.5–25.1; palatal length 11.9–12; interorbital width 6.8–7; zygomatic width 17.5–17.8; mastoid width 14.1–14.4; width of brain case 12–12.4;

width across upper canines 6.9–7.1; across m^2–m^2, 12.4–12.6; upper tooth-row c–m^2, 9.9–10; lower tooth-row c–m_3, 11.3–11.4; length of mandible 18.5–18.8.

Vampyriscus bidens Dobson.

Chiroderma bidens Dobson, Cat. Chirop., p. 535, 1878—Huallaga, Peru.
V[ampyrops] bidens Thomas, Ann. Mag. Nat. Hist., (6), **4**, p. 170, 1889.
Vampyriscus bidens Thomas, Ann. Mag. Nat. Hist., (7), **5**, p. 270, 1900; ibid, (10), **2**, p. 259, 1928.

Peru: Masisea, Tushemo, Rio Ucayali, 1 male, October 6, 1923, San Lorenzo, Rio Maranon, 1 male, 1 female, November 7, 12, 1923, Z. Rutter (by exchange with British Museum). Ecuador: Rio Suno, below Loreto, 1 male, 1 female, February 6, 8, 1929, Olalla and Sons.

Besides the type and Rutter's specimens, these from Ecuador are the only ones recorded. The Ecuador specimens differ in many small ways from the Peruvian ones. The forearms on the Ecuador specimens are broken but from wing measurements they appear to be about the same size as those from Peru, and agree fairly well with them in color, but the skins are so poorly made that accurate comparisons are not obtainable.

The skulls of the Ecuador specimens are longer, wider, and have longer rostrums. The tooth-rows are also longer, due to the greater spacing between the canine and premolars and a little to the very slightly larger teeth. These differences do not appear to be great enough, especially with such poor material, to separate the two.

Measurements.—Forearm 34.3–36.9 (Peruvian specimens). Wing measurements taken on two Ecuador skins: second metacarpal 30.1–31.8; third digit metacarpal 35.6–38, first phalanx 13.2–13.7, second phalanx 20.2–20.9, tip 11.4–11.6; fourth digit metacarpal 33.7–36.9, first phalanx 10.4–11.4, second phalanx 12.5–13; fifth digit metacarpal 33.8–37.2, first phalanx 9–9, second phalanx 11.8–12.5. Skull (two from Ecuador followed by three from Peru): greatest length 20.1–20.5, 19.5–19.8; condylo-basal length 17.4–17.6, 16.8–17.3; palatal length 9.8–10.2, 8.9–9.6; interorbital width 5–5.1, 5–5.8; zygomatic width 11.8–11.9, 11.3–11.4; mastoid width 10.1–10.1, 9.8–10.1; width of brain case 9–9.2, 9–9; width across canines 4.6–5, 4.6–4.8; across m^2–m^2, 8.3–8.6, 7.8–8.2; upper tooth-row c–m^2, 6.5–6.6, 6.2–6.4; lower tooth-row c–m_3, 7.1–7.2, 6.7–7.1; length of mandible 12.7–13.3, 12–12.5.

Chiroderma isthmicum Miller.

Chiroderma isthmicum Miller, Proc. U. S. Nat. Mus., 42, p. 25, 1912—Cabima, Panama; Goldman, Smiths. Misc. Coll., 69, p. 203, 1920; G. M. Allen, Journ. Mamm., 8, p. 158, 1927.

Mexico: Achotal, Vera Cruz, 1 male, February 9, 1904, Heller and Barber.

This bat is known from the type and four other specimens from Panama, one from Costa Rica, and one from Mexico. This second specimen from Mexico now recorded is a little smaller than the type.

Measurements.—Forearm 44.6 mm. Skull, greatest length 22.4.

Artibeus jamaicensis jamaicensis Leach.

Artibeus jamaicensis Leach, Trans. Linn. Soc. Lond., 13, p. 75, 1821—Jamaica.

West Indies: Barbados, 3 males, 4 females alc. (three skulls cleaned), February, 1935, collected and presented by Mr. Stuart J. Walpole.

These specimens furnish the first record of the genus from Barbados and extend the range of the form *jamaicensis* much farther east. While very close to the range of *palmarum*, Trinidad to Guadeloupe, the specimens are too small for that race. In the three skulls cleaned the notch in m^2 between cusps 5 and 7 is reduced but not so much as is common in *palmarum*. The hair bases of the neck and shoulders are white or yellowish white and in two specimens strongly yellowish over the entire back. In this character they resemble two specimens of *Brachyphylla minor* collected with them. The females are all pregnant.

The occurrence of *jamaicensis* on Barbados might be explained by the fact that Barbados represents the last of the outer circle of semi-arid islands which end in the north with St. Kitts, while the islands from Trinidad to Guadeloupe form an ecologically separate row of volcanic and forested islands.

Measurements.—Forearm, males, 58.9–63.2, females, 61–64.5. Skull, 1 male, 2 females: greatest length 28.9–30.6; condylo-basal length 25.5–25.7; palatal length 13.6–13.7; interorbital width 6.9–7; zygomatic width 17.3–17.7; mastoid width 14.6–15; width of brain case 12.3–12.4; width across canines 8.2–8.5; across m^1–m^1, 12.6–13; upper tooth-row c–m^2, 10.2–10.8; lower tooth-row c–m_3, 10.8–11.8; length of mandible 19.8–20.6.

Artibeus watsoni Thomas.

Artibeus watsoni Thomas, Ann. Mag. Nat. Hist., (7), **7**, p. 542, 1901—Bogava, Chiriquí, Panama.

Guatemala: Escobas, near San Tomas, Izabal, 2 males (1 without skull), April 19, 1934, F. J. W. Schmidt.

This species has been reported from Panama, Costa Rica, and Nicaragua, and its range is now extended to Guatemala. These specimens were taken in a bat net.

Measurements.—Forearm 39–39.5; third metacarpal 35.3–36.7. Skull: greatest length 19.9; condylo-basal length 17.7; palatal length 7.9; interorbital width 5; zygomatic width 11.9; mastoid width 10.3; width of brain case 8.9; width across canines 5.3; across m^1–m^1, 8.9; upper tooth-row c–m^2, 6.3; lower tooth-row c–m_3, 7.2; length of mandible 13.

Centurio senex Gray.

Centurio senex Gray, Ann. Mag. Nat. Hist., **10**, p. 259, 1842—southern Mexico or Central America.

Guatemala: Moca, Solola, 11 males (5 alc.), 25 females (7 alc.), January 4–12, 1934, F. J. W. Schmidt.

In his revision of this genus, Rehn (Proc. Acad. Nat. Sci. Phila., pp. 295–302, 1901) listed eleven known specimens taken in Vera Cruz, Mexico, and Costa Rica.

These Guatemalan specimens were all brought to Mr. Schmidt by Indians but they would not tell him where the specimens were caught. This may have been because he was paying a very good price for them. In March Mr. Schmidt returned to Moca but the Indians brought in no more *Centurio* and still would not tell him how or where they caught them. From the numbers caught on different days: January 2 (2); 6 (2); 7 (3); 9 (3); 10 (6); and 12 (12), it would seem that they were not all in one colony.

Measurements.—Twenty-four skins and skulls: forearm 41–43.6. Skull: greatest length 17.4–18.4; condylo-basal length 14.5–15.3; palatal length 2.8–3.4; interorbital width 4.8–5.4; zygomatic width 14.6–15.3; mastoid width 11.6–12.2; across m^2–m^2, 10.4–11.1. Twelve alcoholic specimens: forearm 41.1–43.6; pollex s.u. 7.8–8.2; second finger metacarpal 30.5–33.7; third finger metacarpal 36.3–40, first phalanx 15.8–17.5, second phalanx 20.8–22.5, tip 9.6–11.4; fourth finger metacarpal 34–37.4, first phalanx 12–14.2, second phalanx 10–14.4; fifth finger metacarpal 34.2–40, first phalanx 12.6–14.4, second phalanx 9.7–12.3. Tibia 18.3–20.3; calcar 6–6.9.

Diphylla ecaudata Spix.

Diphylla ecaudata Spix, Sim. Vesp. Bras., Species Novae, p. 68, pl. 36, fig. 7 (animal), 1823—Brazil; Tomes, Proc. Zool. Soc. Lond., p. 212, 1860—Rio Napo, Ecuador, one specimen; Gray, Proc. Zool. Soc. Lond., p. 118, 1866; Dobson, Cat. Chirop., p. 550, 1878—measurements of alcoholic specimen in Berlin Museum; Alston, Biol. Cont.-Amer., p. 53, pl. 3, fig. 6 (head), 1879–82—Guatemala (Berlin Museum); H. Allen, Proc. Acad. Nat. Sci. Phila., p. 319, 1889—structure of wings; H. Allen, Proc. U. S. Nat. Mus., **18**, p. 769, figs. 1–6 (head, skull, and wing), 1896; Thomas, Ann. Mus. Civ. Stor. Nat. Genova, ser. 2A, **20**, p. 548, 1899—Palmeira, Parana, Brazil; J. A. Allen, Bull. Amer. Mus. Nat. Hist., **13**, p. 87, 1900; ibid, **20**, p. 458, 1904—Cacagualito, Colombia; Thomas, Ann. Mag. Nat. Hist., (9), **18**, p. 158—Puca Tambo, Peru; ibid, (9), **18**, p. 346, 1926—Corosha, Amazonas, Peru; ibid, (9), **19**, p. 367, 1927—San Martín, Yurac Yacu, Peru; ibid, (10), **2**, p. 259, 1928—Masisea, Peru.

Ecuador: Rio Pindo Yaco, 1 female, October 10, 1934, R. Olalla.

Thirteen specimens of this bat have been recorded from Mexico, Guatemala, Panama, Ecuador, Colombia, Peru, and Brazil. This is the second to be recorded from Ecuador. The only skull measurements published are those of *D. centralis* Thomas (Ann. Mag. Nat. Hist., (7), **11**, p. 378, 1903—Boquete, Chiriquí, Panama), which was based on the shape of the lower cheek-teeth. Allen's specimens from Mexico agreed with Brazilian specimens so it is doubtful if the characters of *centralis* will be found to be constant when more specimens are examined.

Measurements.—Forearm 49.4; pollex 9.3; second digit 41; third digit metacarpal 50, first phalanx 9, second phalanx 24, tip 15.5; fourth digit metacarpal 49.2, first phalanx 8.1, second phalanx 18.7; fifth digit metacarpal 48.8, first phalanx 10.7, second phalanx 16. Skull: greatest length 22.2; condylo-basal length 18.4; palatal length 6.5; interorbital width 6.5; zygomatic width 12.1; mastoid width 11.8; width of brain case 11.2; width across canines 5.3; upper tooth-row 3.2; lower tooth-row 4; length of mandible 13.1.

Promops centralis Thomas.

Promops centralis Thomas, Ann. Mag. Nat. Hist., (8), **16**, p. 62, 1916—northern Yucatan, Mexico.

Guatemala: Salama, Baja Verapaz, 2 females, alc. (1 skull cleaned), April 27, 1934, E. R. Blake.

These are the first specimens to be recorded since the description of the type, than which they are a little larger.

Measurements.—Forearm 55.2–56.5; tail 60.6–62.7; pollex 7.3–8; second metacarpal 56.3–58.1; third finger metacarpal 57.7–60.1,

first phalanx 20.1–21.1, second phalanx 21.8–22.4; fourth finger metacarpal 56.2–57.5, first phalanx 21.6–21.7, second phalanx 4–4; fifth finger metacarpal 35.3–35.9, first phalanx 14.3–15.7, second phalanx 5.2–5.1; tibia 20.7–20.7. Skull: greatest length 21.7; condylo-basal length 19.9; palatal length 8.4; interorbital width 4.2; zygomatic width 13; mastoid width 12.5; width of brain case 10.8; across canines 5.5; across m^2–m^2, 9.5; upper tooth-row 8.5; lower tooth-row 9.2; length of mandible 14.4.

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